



TITLE:

The Intensity Distribution of Slow Neutrons in KMnO Solutions The Production of Radioactive Manganese by Irradiation of Neutrons

AUTHOR(S):

Kimura, Kiichi; Ishiwari, Ryutaro; Sakisaka, Masakatsu; Kumabe, Isao; Yamashita, Sukeaki; Miyake, Kozo

CITATION:

Kimura, Kiichi ...[et al]. The Intensity Distribution of Slow Neutrons in KMnO Solutions The Production of Radioactive Manganese by Irradiation of Neutrons. 京都大学化学研究所報告 1952, 29: 68-68

ISSUE DATE:

1952-06-30

URL:

<http://hdl.handle.net/2433/74441>

RIGHT:

about 6×10^{-5} mmHg. under the gas inlet of 15 cc/hr.

After these fundamental considerations and experiments, we bombarded beryllium by the deuterium ion beam of 120 μ A having energy of about 340 kilovolts and found the production of neutrons equivalent to about 1 gr. Ra+Be neutron source.

4. The Intensity Distribution of Slow Neutrons in KMnO_4 Solutions

The Production of Radioactive Manganese by Irradiation of Neutrons

*Kiichi Kimura, Ryutaro Ishiwari, Masakatsu Sakisaka, Isao Kumabe,
Sukeaki Yamashita and Kōzō Miyake*

(K. Kimura Laboratory)

The target of beryllium was bombarded by the 340 Kev deuteron beam accelerated by the high voltage machine of Cockcroft-Walton type. The Be-D neutron source was placed in the center of the water held in a bottle with the diameter and the depth of 29cm and 30cm respectively, and a glass ampoule containing a small quantity of 5% KMnO_4 solution was hung at various distances from the source. The distribution of the slow neutron intensity in the water was measured using the induced activity of radioactive manganese Mn^{56} produced in the ampoule, and the NR^2 curve was plotted, where N was the intensity of the neutron flux and R was the distance from the source. The peak of the NR^2 curve was found at $R=10\text{cm}$.

In the same way, the distribution of the slow neutron intensity in the 5% KMnO_4 solution and the yield of the radioactive manganese were observed with the small quantity of KMnO_4 solutions.

In both cases, the distribution of the slow neutron intensity seemed to be nearly equal. The intensity of Be-D neutrons produced by our machine was equivalent to that of 1gr Ra-Be neutron source. The yield of the radioactive manganese produced from 8 litres of KMnO_4 solution during three hours was estimated to be about $15\mu\text{c}$.

5. On the Energy Distribution of the Compton Electrons by $\text{Co}^{60}\text{-}\gamma$

Toshio Azuma, Kunihiko Tsumori and Kiichi Kimura

(K. Kimura Laboratory)

The energy spectrum of gamma-rays from Co^{60} (1.17 Mev and 1.33 Mev), reported in the preceding issue of this Bulletin (26, 63 (1951)), has been fur-